

## Introduction to VSTSynthFont, Version 3.600, 2024

Press **Options** to open a dialogue box with further options. There is also a drop-down menu with some options for quick access.

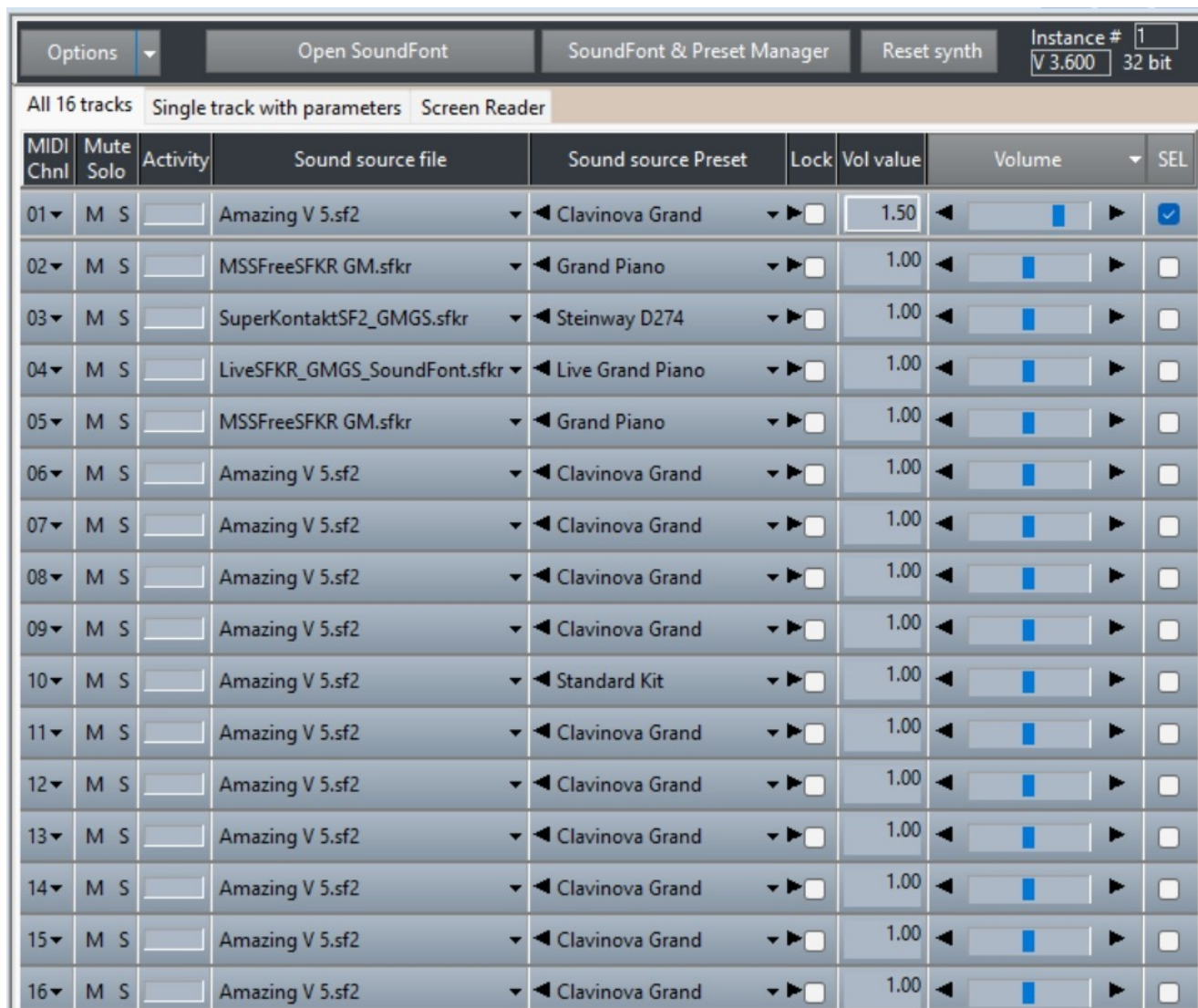
Press **Open SoundFont** to open and select a SoundFont (or similar file) for the selected track. Note that you can check several tracks using the check-boxes in the SEL column to the right. Click on the SEL button to toggle selection.

Press **SoundFont & Preset Manager** to search and audition Presets in many SoundFonts with a simple tool.

Press **Reset synth** if the synthesizer gets stuck repeating a note.

What does the Instance # tell you? In a DAW (i.e. a "VST host") you may create several copies - or instances - of the plugin for multiple DAW tracks. You may also be able to assign one single instance of the plugin to multiple tracks. As the plugin can handle all 16 MIDI channels within one single instance, it may even be a good choice to have one instance for multiple tracks.

What does the text "V 3.600" mean? It tells you which version of the plugin you have. Next to it you see the text "32 bit" (in this image) but it could also say "64 bit". This is the CPU architecture used by the plugin. Generally speaking you should select the 32 bit version for 32 bit hosts, and the 64 bit one for 64 bit hosts. Many hosts can offer "bridging" between the two architectures, but it is seldom a good idea.



The screenshot shows the VSTSynthFont interface. At the top, there are buttons for 'Options', 'Open SoundFont', 'SoundFont & Preset Manager', and 'Reset synth'. On the right, there is a display for 'Instance # 1' and 'V 3.600 32 bit'. Below these buttons, there are three tabs: 'All 16 tracks', 'Single track with parameters', and 'Screen Reader'. The 'All 16 tracks' tab is selected, showing a table with 16 rows representing MIDI channels. Each row has columns for MIDI Chnl, Mute, Solo, Activity, Sound source file, Sound source Preset, Lock, Vol value, Volume, and SEL. The first row (01) is selected, showing 'Amazing V 5.sf2' as the sound source file and 'Clavinova Grand' as the preset. The SEL column for the first row has a checked checkbox.

MIDI Chnl	Mute	Solo	Activity	Sound source file	Sound source Preset	Lock	Vol value	Volume	SEL
01	M	S		Amazing V 5.sf2	Clavinova Grand		1.50		<input checked="" type="checkbox"/>
02	M	S		MSSFreeSfkr GM.sfkr	Grand Piano		1.00		<input type="checkbox"/>
03	M	S		SuperKontaktSF2_GMGS.sfkr	Steinway D274		1.00		<input type="checkbox"/>
04	M	S		LiveSfkr_GMGS_SoundFont.sfkr	Live Grand Piano		1.00		<input type="checkbox"/>
05	M	S		MSSFreeSfkr GM.sfkr	Grand Piano		1.00		<input type="checkbox"/>
06	M	S		Amazing V 5.sf2	Clavinova Grand		1.00		<input type="checkbox"/>
07	M	S		Amazing V 5.sf2	Clavinova Grand		1.00		<input type="checkbox"/>
08	M	S		Amazing V 5.sf2	Clavinova Grand		1.00		<input type="checkbox"/>
09	M	S		Amazing V 5.sf2	Clavinova Grand		1.00		<input type="checkbox"/>
10	M	S		Amazing V 5.sf2	Standard Kit		1.00		<input type="checkbox"/>
11	M	S		Amazing V 5.sf2	Clavinova Grand		1.00		<input type="checkbox"/>
12	M	S		Amazing V 5.sf2	Clavinova Grand		1.00		<input type="checkbox"/>
13	M	S		Amazing V 5.sf2	Clavinova Grand		1.00		<input type="checkbox"/>
14	M	S		Amazing V 5.sf2	Clavinova Grand		1.00		<input type="checkbox"/>
15	M	S		Amazing V 5.sf2	Clavinova Grand		1.00		<input type="checkbox"/>
16	M	S		Amazing V 5.sf2	Clavinova Grand		1.00		<input type="checkbox"/>

The image above shows the default or standard editor layout. It shows 16 tracks all of which can be assigned to any of the 16 MIDI channels. The column to the right, with a down arrow, shows which channel is assigned to which track. Press the number box for a menu which will let you assign a MIDI channel to a track. *It is possible to assign the same MIDI channel to multiple tracks.*

The next column, **Mute / Solo**, contains two buttons, “M” and “S”, that can be used to Mute a track or make a track play Solo.

The **Activity** column is for visual purpose only. It gives a rough idea of the number of notes playing in a track.

The column **Sound Source File** contains buttons with a drop-down menu that lets you select a file for the track, either picking from a list of files in use now, or from the history. Note that each track can have its own file.

The column **Sound Source Preset** contains buttons with a drop-down menu that lets you select a Preset for the track. Each track can have its own Preset. Normally, the Preset is set by the MIDI Program Change message, if sent to the plugin by the host. You can prevent this from occurring by checking the box to the right, in the **Lock** column.

The column **Vol value** is tightly connected to the next column, **Volume**. The Volume button has a down arrow and a drop-down menu.

When you select an item from this “Mixer” menu, the two texts change to reflect the choice.

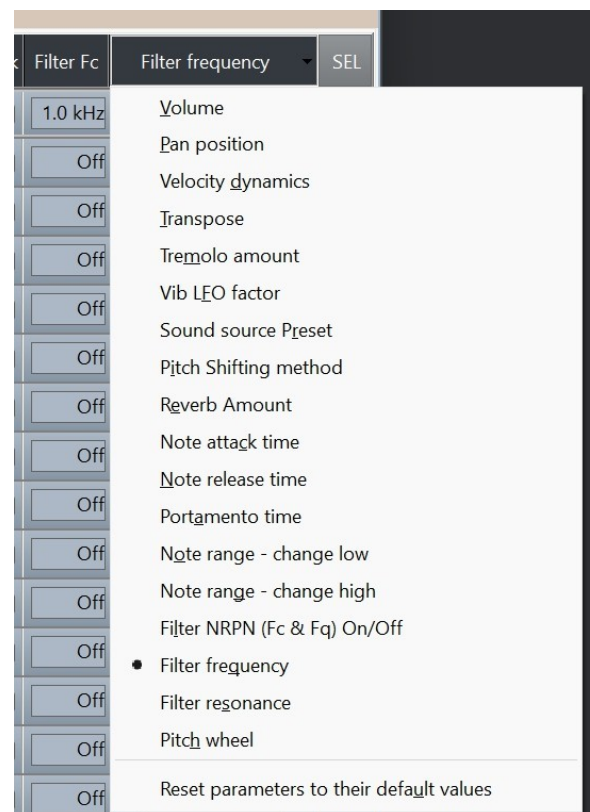
Most items in this “Mixer” menu are self-explanatory but there are a few that may require some explanations.

**Velocity dynamics** lets you “flatten” the dynamic range offered by the MIDI note Velocities by adjusting the original Velocity-to Volume curve to make it flatter, less responsive.

**Tremolo amount** (NEW) adds tremolo (volume level changes) to the output using the SoundFont’s Vib LFO oscillator.

The frequency of the Vib LFO can be changed with the **Vib LFO factor**.

**Sound Source Preset** offers a simple means to scroll through the Sound Sources stored in the Sound File without opening the menu.

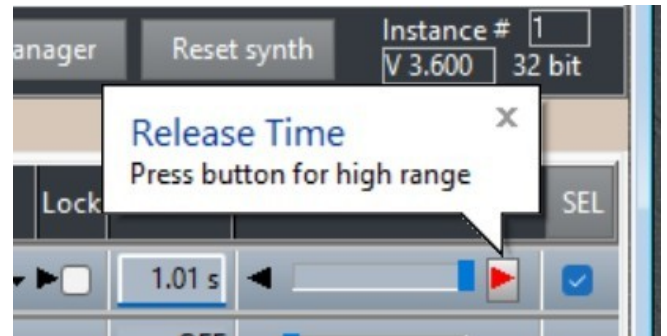


**Pitch Shifting method** - pitch shifting is needed to create sound for notes not directly available in the SoundFont. The audio data in a SoundFont is usually collected into zones of notes. Thus one audio sample can be used to create several notes, close to each other. But pitch shifting is also used to create variations in the sound, for example vibrato or pitch wheel changes. The standard Pitch Shifting method is fast and mostly sufficient, but there are cases when this method may create unwanted frequencies in the sound due to aliasing. The Perfect Pitch method is mathematically a lot more complicated than the standard method and hence needs more CPU power.

Set the **Reverb Amount** to something if you want the final sound from the track to pass through the internal reverb effect. In Options (or the Options drop-down menu) you can choose between five reverb models.

Change **Note attack time** (NEW) to override the attack phase time coded into the SoundFont.

Change **Note release time** to override the release phase time coded into the SoundFont. The slider has a special behaviour in this case - see image.



**Portamento time** (NEW) is not defined in a SoundFont but can be set using a MIDI Continuous Controller. This item makes it easier to change the time. NOTE: In this version of the plugin, the Portamento time is absolute, i.e., it does not depend on the distance between the two notes making up the Portamento slide effect.

**Note range - change low** and **Note range - change high** makes it easy to create note filters for the track. Remember that you can have on single MIDI channel in two or more tracks. Using these you can direct the notes into the tracks suitable for them. NOTE: these settings are also available in Options (see below).

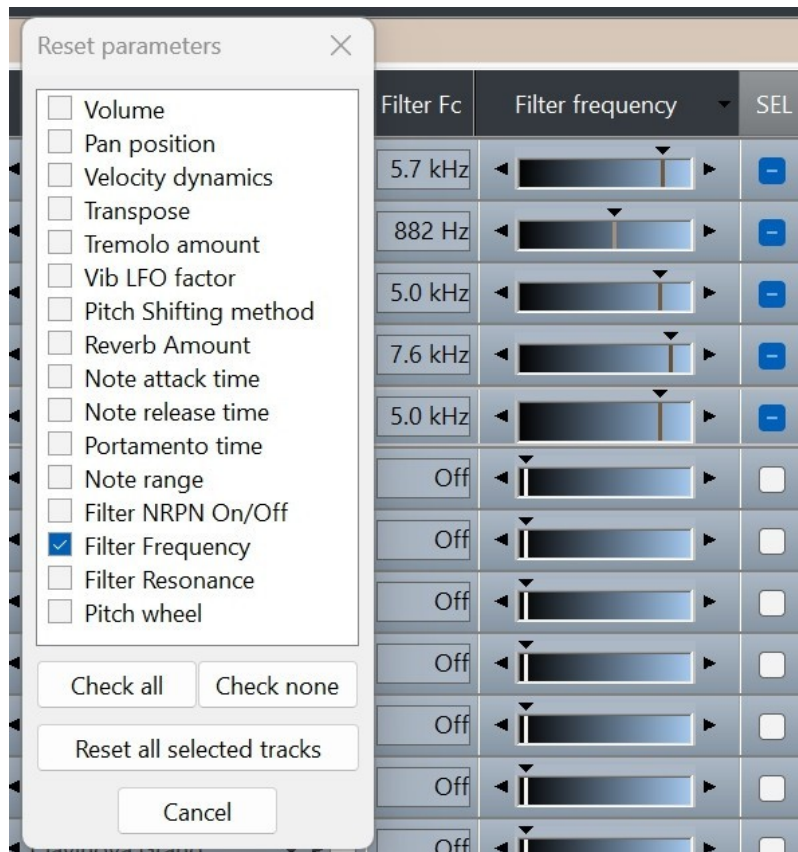
**Filter NRPN (Fc & Fq) On/off.** This is a rather complicated feature. This feature offers full support for Creative Lab's SoundBlaster Live! Non Registered Parameter Numbers (NRPNs) for setting Low Pass filter parameters. *Technical background of NRPN: You can change a number of instrument's SoundFont parameters (for example Low Pass filter parameters like cut-off frequency Fc and resonance Fq) through MIDI in real time via NRPNs. As NRPNs and Data Entry messages are MIDI controller messages, any MIDI sequencer software that supports editing of controller messages is capable of editing them.*

**Filter frequency** - use to override the Low Pass Filter frequency encoded in the SoundFont. Set to zero for Off, in which case the value in the SoundFont will be used.

**Filter resonance** - use to override the Low Pass Filter resonance encoded in the SoundFont. Set to zero for Off, in which case the value in the SoundFont will be used.

**Pitch wheel** - can be adjusted in real time during playback to have notes pitch changed.

The last item on this menu lets you quickly reset all values to their defaults. When you click this menu item a new dialogue box will be presented:



This tool allows you to reset all 16 parameters or only the selected ones. This tool will reset parameters for all selected tracks, so make sure to select the tracks you want to change **before** displaying this tool. For example in this image, five tracks have been selected. Remember that you can select multiple tracks in two ways: toggle all by pressing the SEL button in the button header, or keep CTRL key down while checking the check boxes in the SEL column.

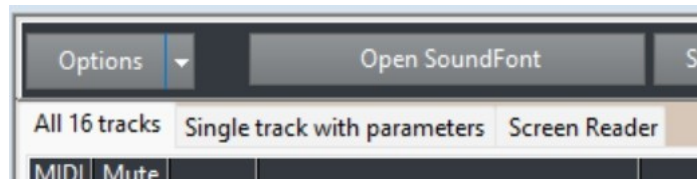
Almost all parameters described above are exported to the host so that the host can also change them, either by direct interaction by the user or by using the (optional) automation functions in the host. For example, the image below shows a very simple automation curve for the Filter Frequency (Fc). NOTE: Here a Fc value of zero means “not applied” and the value set in the SoundFont will be used.





## Single track with parameters

If you look at the image on Page 1, you find that there is a page selector at the top with three pages to select from:



The first page says “All 16 tracks” and this is the default User Interface view. The next one says “Single track with parameters” and this is a new view. The last one says “Screen Reader” and this is a view optimized for screen readers. This last view has been available previously but in a separate window making it hard to switch between views.

Let’s have a look at the new “Single track with parameters”:

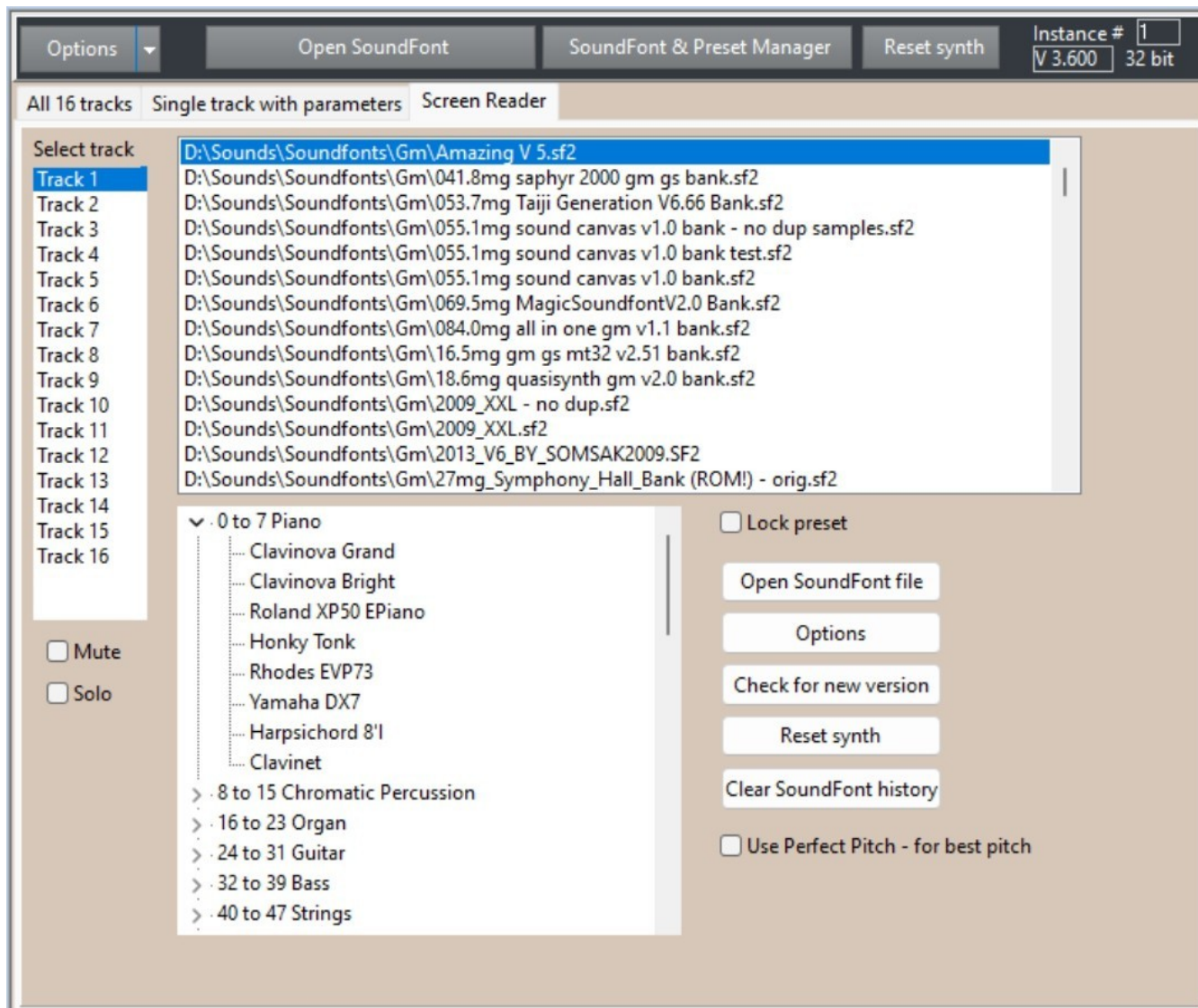


At the top you find a row of radio buttons called “Select track”. This view shows data for one single track at a time and here you can select which track it is. Below is a row with items similar to the ones in the “All 16 tracks” view. Below this there are 12 knobs for 12 parameters. You can choose the knob type in Options, page “Visual”. Most parameters have a real-time aspect - the sound will change also for notes playing. This is not the case for Transpose, Note attack, Note release, and Portamento time. NOTE that the “Reset all parameters” on this page will reset ONLY the 12 parameters visible here, while the “Reset parameters...” menu item on page 2 will reset values for ALL selected parameters.

- This plugin version publishes 11 parameters: Volume, Pan, Tremolo, Vib LFO Factor, Reverb amount, Reverb Mode (not OnOff), Note attack, Note release, Filter frequency, Filter resonance and PitchWheel. All of these are also found in the plugin's "Mixer" drop-down menu on page "All 16 tracks". The host can use these parameters in various ways.

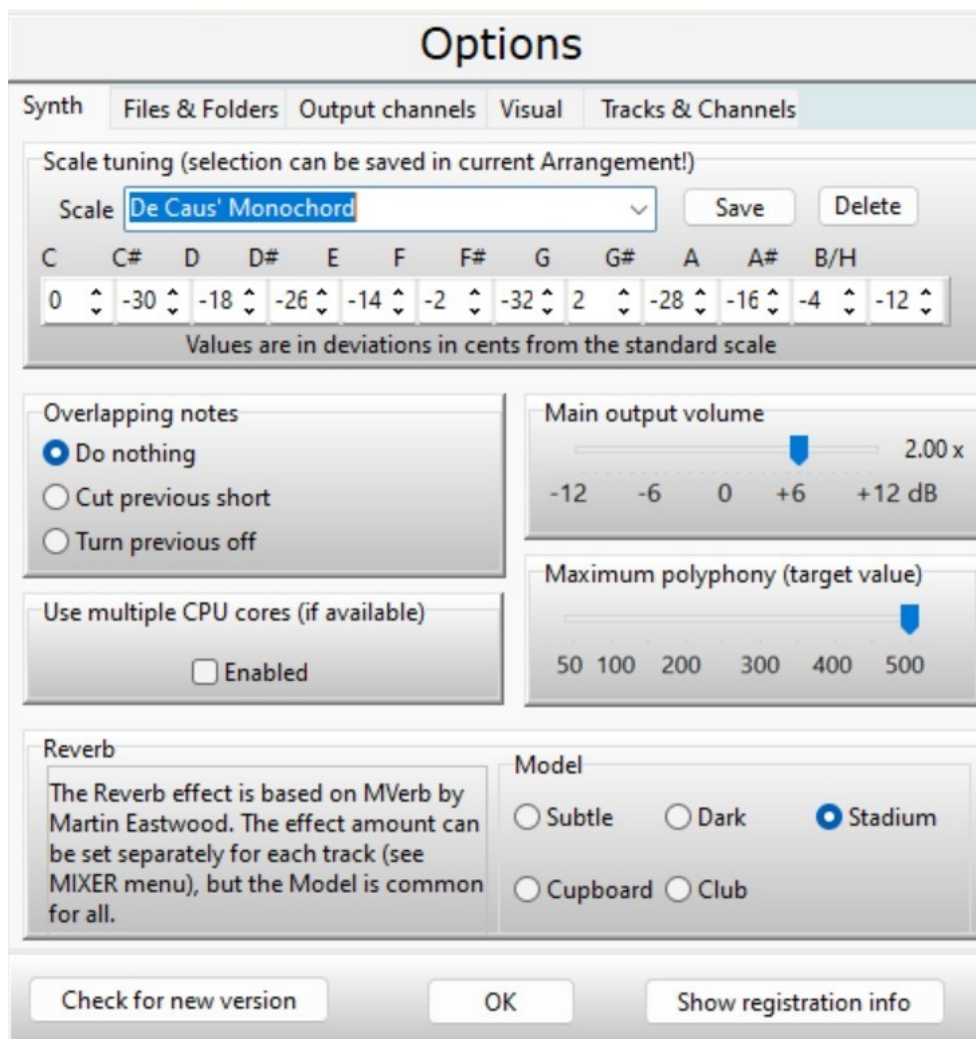
## Screen Reader

The third page on the page selector is the one optimized for **screen readers**, but it is of course possible for anyone to switch to this page at any time in order to use the functionality there. The page does not offer anything that is not available on the other pages, but the layout is totally different.



## Options

The Options dialogue also offers a set of pages, at the top.



### Synth page

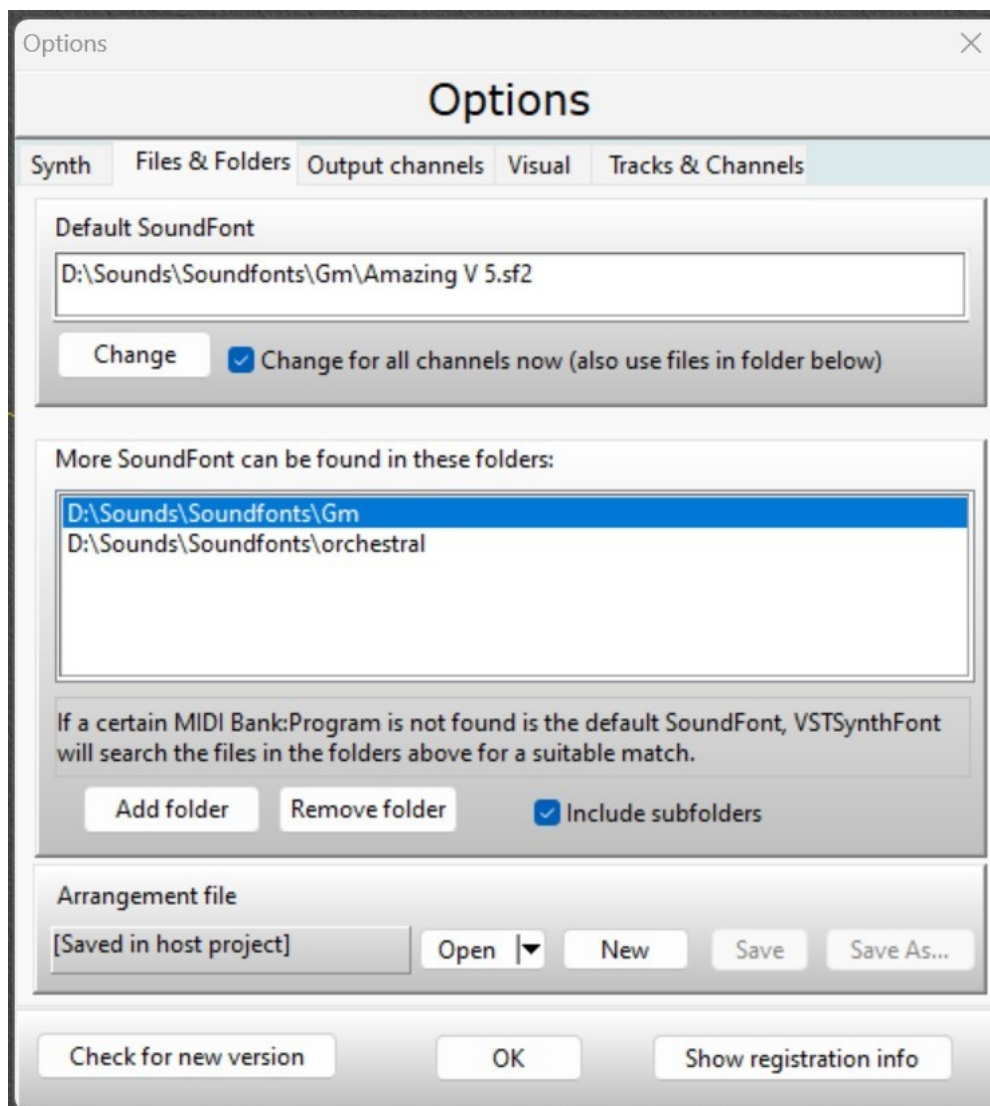
**Scale tuning** is a rather specific topic and if you have never encountered this feature before, now is probably not the time to delve into it. Suffice to say the plugin offers a feature to make it possible to deviate from the scale mostly used in Western music.

**Overlapping notes:** In most cases it is best to keep the “Do nothing” selection, but, a few words about why there may be a need for changing this may be necessary. A MIDI note consist of two MIDI events: a NOTE-ON event and at a later time a NOTE-OFF event. If there are two NOTE-ON events for a particular note X without a NOTE-OFF event we will have two overlapping notes (X1 and X2). Then, at a later time arrives a NOTE-OFF event for note X. Now arises the question: which X note should be turned off? X1 or X2 or event both? You can motivate both. VSTSynthFont will turn off the first X note and hope for another NOTE-OFF event for the second one. This may be wrong. To avoid this ambiguity, you may choose any of the two options - cut previous short means that the previous note will be turned off without a normal note release phase.

**Use multiple CPU cores** may be of advantage only if you have a single plugin connected to multiple tracks (and MIDI channels) in your host. If not, keep it disabled as this technology adds some extra overhead.

Use **Maximum polyphony** if you experience that the plugin seems to get stuck with too many notes playing at the same time. Note that polyphony is NOT equal to the number of notes, but usually larger. For example, a note may contain a stereophonic sound, and in this simple case polyphony will be twice the number of notes.

In the **Reverb** section you can choose the model that best fits your mix. NOTE that in this case you will need to define separately for all tracks the required Reverb Amount.

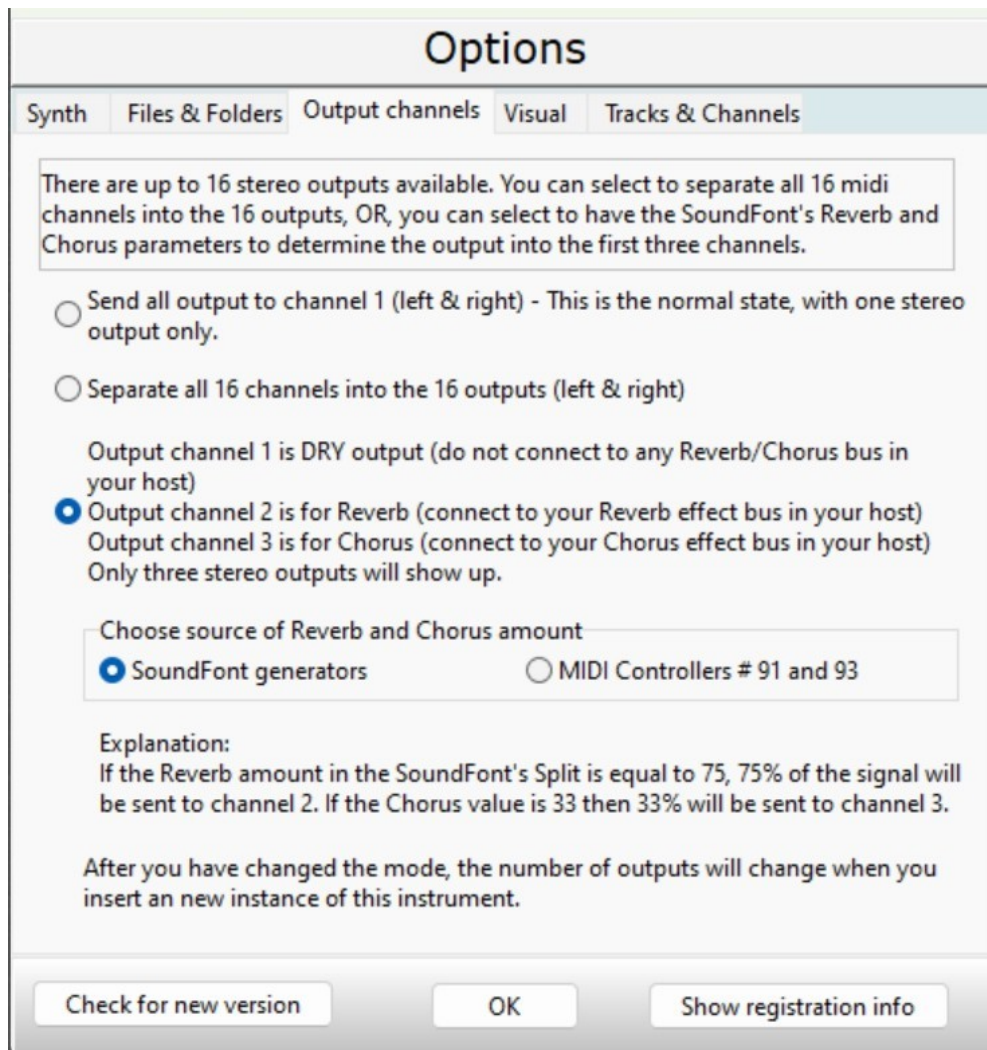


## Page Files & Folders

The first and most important file to define is the Default SoundFont. Below this selection you can define a number of folders where you keep a selection of SoundFonts (or similar files) which you want the plugin to use if a particular Preset defined by the MIDI Bank and MIDI Program number is not found in the Default SoundFont.

The area below - **Arrangement file** - is for compatibility reasons only. This feature should no longer be used as most hosts can save the arrangement with the host's project.

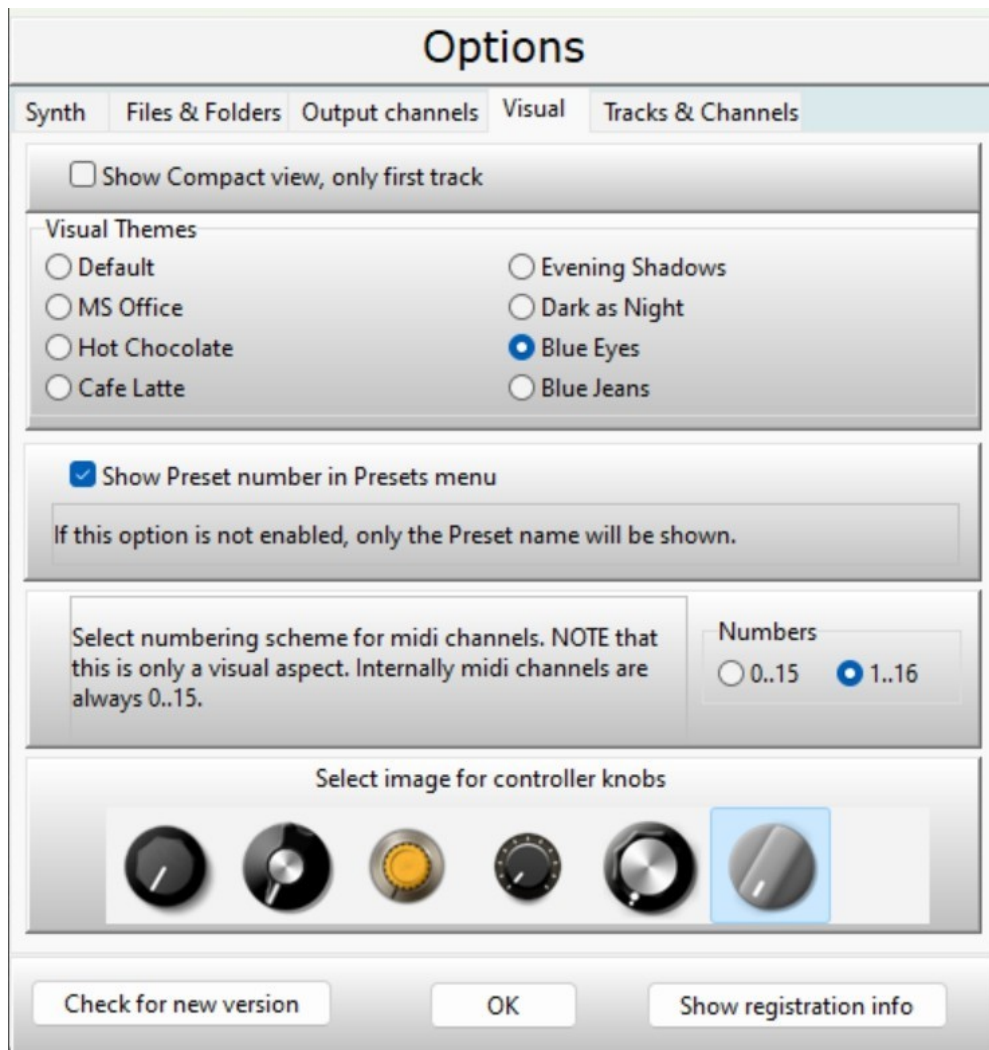




The normal mode of operation is to feed the audio output into two output channels - one for the left signal and one for the right.

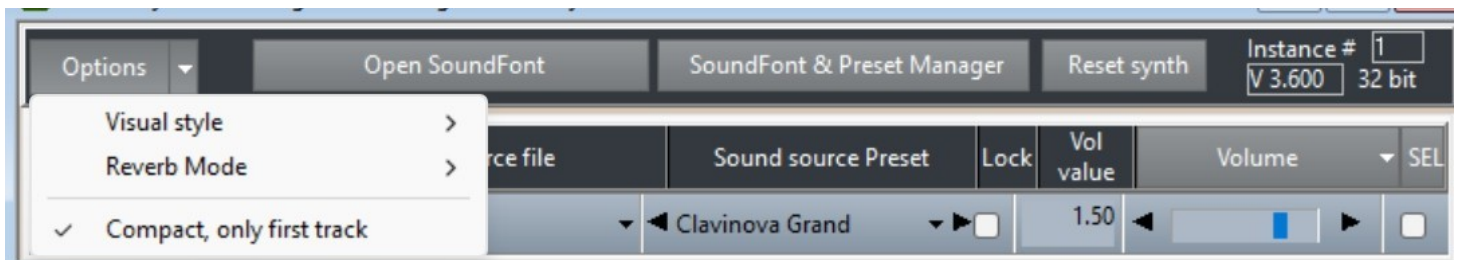
The second alternative is to send all sixteen MIDI channels into 16 stereo channels

The third choice is to feed the output into three stereo channels. The first one will receive the so called DRY output while the second will receive the Reverb send output and the third will receive the Chorus send output. NOTE: Normally the Reverb and Chorus send amounts are given by the corresponding values in the SoundFont Preset, but as an alternative you can let the MIDI Continuous Controllers #91 and 93 set this amount (see page 12),



## Visual

**Show Compact view, only first track** - check to minimize the user interface to show only the first track:



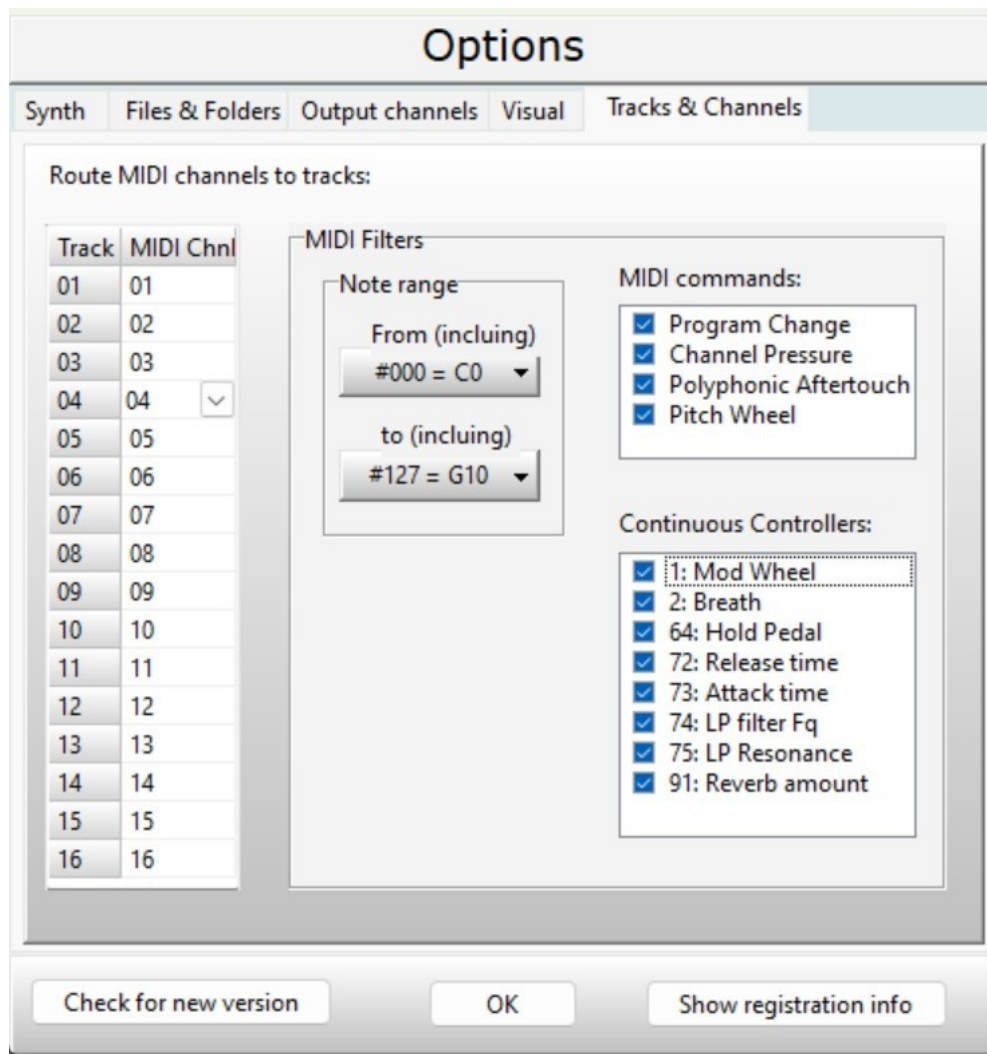
Note that you can access this option also in the drop-down menu for the Options button.

Visual themes - here you can select the visual style of the GUI. Note that you can access this option also in the drop-down menu for the Options button.

**Show Preset numbers in Presets menu** - check to have the Presets menu only show the name of the preset.

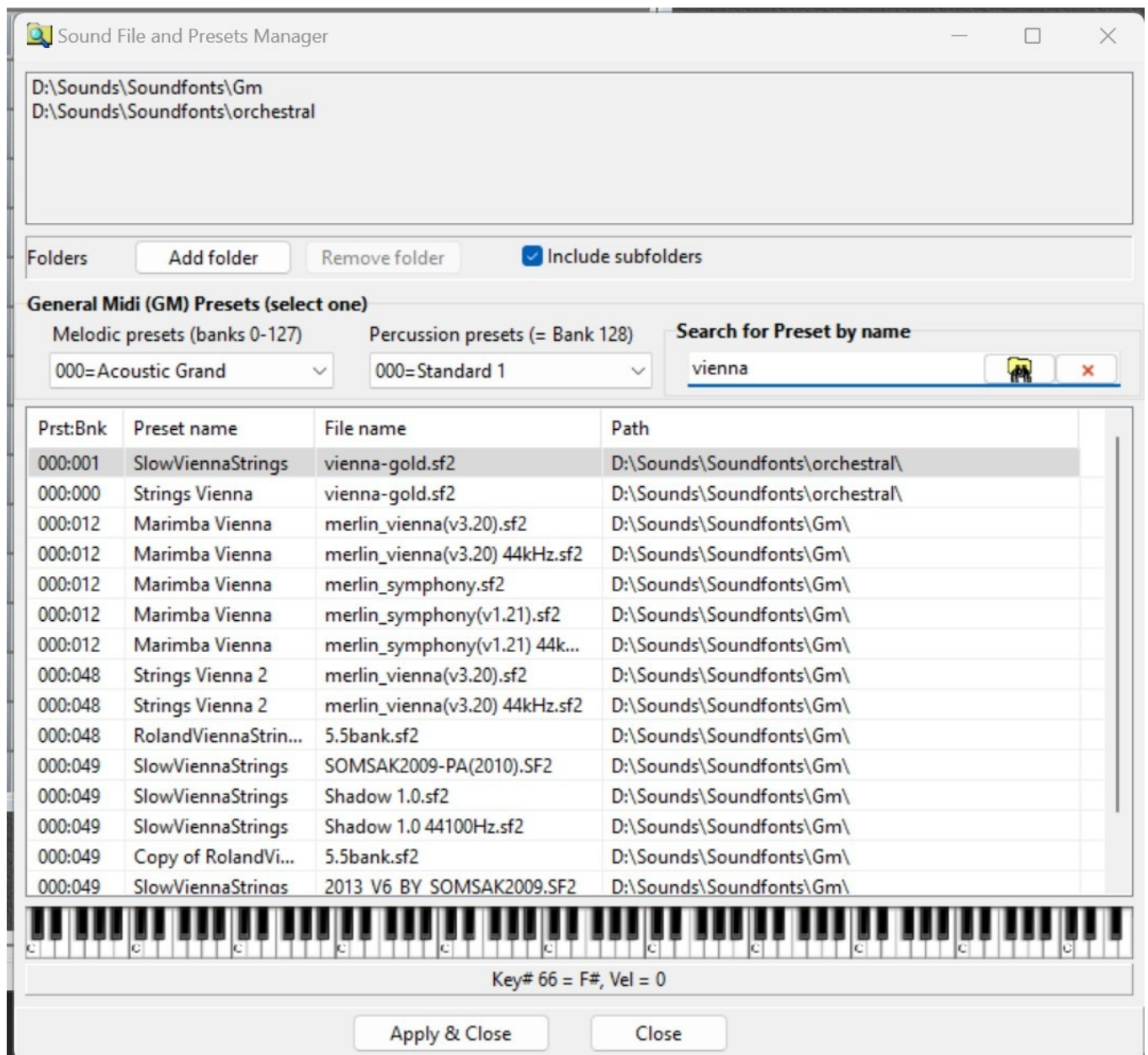
In the next box you can define which number range to use for the MIDI channels. Internally channels are number from 0 through 15, but you may be used to seeing the range 1..16.

Finally, a box with images for the knobs in the GUI page 3.



This page lets you

- set the MIDI channel for the 16 tracks
- define the note range (filter) for a track (see page 3)
- define which MIDI commands and Continuous Controllers a track can respond to (a second filter)



The Sound File and Presets Manager is a very handy tool to use when you need to find the best sound for a particular track. Files in the folders you have defined in Options (see page 7) will be searched for the presets. You can search in two ways: for Presets corresponding to a specific Bank and MIDI Program number, or, for Presets which contain a certain phrase in the name.

Note that Melodic presets can be found in any Bank below 128, while Percussion presets are always found in Bank 128.



## **MIDI Continuous Controllers used by the plugin**

#0: Bank select (coarse) - allows the user to switch bank for Preset selection by using the MIDI Program Change event

#1: Modulation Wheel (coarse) - this CC controls a vibrato effect (pitch change)

#5: Portamento Time (coarse) - controls Portamento rate used to slide between two notes played subsequently. NOTE: there is an internal, exported parameter that can be set using a slider (page 2) or knob (page 4). This overrides the CC rate

#6: Data Entry (coarse) - sets the value used by NRPN or RPN parameters (see page 13)

#7: Volume (coarse) - controls the overall volume of the channel

#8: Balance (coarse) - controls the left and right balance

#10: Pan (coarse) - controls the left and right balance, basically the same as #8

#11: Expression (coarse) - this is a volume control that enables fine resolution of #7

#32: Bank Select (fine) - together with #0 this CC allows the user to switch bank for Preset selection

#38: Data Entry (fine) - if CC#99 is equal to 127 and CC#98=21 the value is used to set the Low Pass Filter cutoff frequency. If CC#99 is equal to 127 and CC#98=22 the value is used to set the Low Pass Filter resonance

#64: Pedal hold - this is an on/off switch that controls the sustain or hold pedal

#65: Portamento - this is an on/off switch that controls the Portamento. Note: if the Portamento Time parameter referred to in #5 above is set to a positive value, this on/off switch has no effect

#68: Legato - this is an on/off switch that controls the legato functionality

#72: Sound Controller 3 - controls the note release time

#74: Sound Controller 5 - another means to control the cutoff frequency of the Low Pass filter, using another formula than #38 in combination with #99

#75: Sound Controller 6 - another means to control the resonance of the Low Pass filter, using another formula than #38 in combination with #99

#84: Portamento note - defines which note the subsequent note is gliding from. When a Note-On is received after a Portamento note message, the note's pitch will glide from the note specified to the new note's own pitch (at the rate set by the Portamento time controller #5)

#91: Effects level 1 - this is usually used to set the amount of Reverb. In VSTSynthFont it can be used only in connection with output mode using three output channels (see page 8). Note that there is separately an internal, exported parameter for the Reverb amount

#93: Effects level 3 - this is usually used to set the amount of Chorus. In VSTSynthFont it can be used only in connection with output mode using three output channels (see page 8)

#98 and #99 - together these two values determine which NRPN functions will be controlled by the #6 value (see page 13)

#100 and #101 - together these two values determine which RPN functions will be controlled by the #6 value (see page 13)

#120 and #123 - All Notes Off

MIDI defines two sets of additional controllers that can be use to extend the range of controllers on page 12:

RPN = “Registered Controllers” or “Registered Parameter Number”, set by CC#100 and #101  
and

NRPN = “Assignable Controller” or “Non-Registered Parameter Number”, set by CC#98 and #99

As a general rule (but not a hard requirement) new functions should define RPN messages to control parameters that have not previously been defined.

Manufacturer-Specific functions should use NRPN messages to control any function that does not have a Control Change or RPN defined for that function. Thus, if there does not exist a defined CC number for a particular purpose, a device can use the General Purpose Sliders (#6 and #32) and CCs #98 and #99 for device specific purposes.

These RPN's are currently defined:

RPN 00 - Pitch Bend Sensitivity, implemented in VSTSynthFont

RPN 01 - Channel Fine Tune, not implemented

RPN 02 - Channel Coarse Tune, not implemented

RPN 03 - Tuning Program Select, not implemented

RPN 04 - Tuning Bank Select, not implemented

RPN 05 - Modulation Depth Range, not implemented

These NRPN's are currently implemented:

For CC#98=21 and CC#99=127: CC#38 sets the Low Pass Filter cutoff frequency

For CC#98=22 and CC#99=127: CC#38 sets the Low Pass Filter resonance